

SARAB SETHI

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ACADEMICS

Imperial College London, London

2016 - 2020 (*expected*)

PhD candidate working on fully autonomous ecosystem monitoring in tropical forests.

Supervisors: Dr. Nick Jones (Applied Mathematics), Prof. Robert Ewers (Forest Ecology), Dr. Lorenzo Picinali (Design Engineering)

Real-time ecosystem monitoring network

Developed a novel embedded system for robust, real-time ecosystem monitoring [1]. Designed, deployed and maintain an autonomous acoustic monitoring network at SAFE project, Sabah, Malaysia (SAFE Acoustics). Implemented a full server architecture to index and analyse audio as it is uploaded from the field in real-time.

Feature based time-series analysis

Applied highly comparative time-series analysis to a study of rs-fMRI in mouse brains [2], and have worked on well-motivated feature subset selection using supervised and unsupervised methods [3, 4].

Applied similar methods to investigate how tropical forest soundscapes change with land degradation, and to detect acoustic anomalies in an unsupervised manner.

Conferences and workshops

Presented talks and posters at several international academic and non-academic workshops and conferences, including invited talks to the UNESCO Netexplo Forum, Paris and the Poladian Project, Sydney.

Supervision

Recruited, trained and supervise two full time research assistants at SAFE project since February 2018. Co-supervised two master's students working on automated gibbon call detection and camera trap species identification.

University of Oxford, Oxford

2012 - 2016

MEng Engineering Science

First class

Studied at National University of Singapore on exchange for final year

4th year research project: Automated video-based heart rate monitoring

3rd year design project: Tickr - a mobile system for home monitoring of heart-failure patients

Abingdon School, Abingdon

2007 - 2012

A Levels: Further Maths A*, Maths A*, Physics A*, Economics A, French A. *GCSEs:* 11 A*s

PUBLICATIONS

- [1] Sarab S. Sethi, Robert M. Ewers, Nick S. Jones, Christopher David L. Orme, and Lorenzo Picinali. Robust, real-time and autonomous monitoring of ecosystems with an open, low-cost, networked device. *Methods in Ecology and Evolution*, September 2018.
- [2] Sarab S. Sethi, Valerio Zerbi, Nicole Wenderoth, Alex Fornito, and Ben D. Fulcher. Structural connectome topology relates to regional BOLD signal dynamics in the mouse brain. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 27(4):047405, April 2017.
- [3] Carl H. Lubba, Sarab S. Sethi, Philip Knaute, Simon R. Schultz, Ben D. Fulcher, and Nick S. Jones. catch22: CAnonical Time-series CHaracteristics. *bioRxiv*, page 532259, January 2019.
- [4] Ben D. Fulcher, Carl H. Lubba, Sarab S. Sethi, and Nick S. Jones. CompEngine: a self-organizing, living library of time-series data. *arXiv:1905.01042 [physics]*, May 2019. arXiv: 1905.01042.

I have spoken about my research to France24, New Scientist, TNW, MagPi, Imperial College News and others. Links to: Google Scholar, Publons, GitHub.

GRANTS AND AWARDS

EPSRC Impact Acceleration Account: Awarded £15,000 early stage funding for further development of our ecosystem monitoring hardware [1]. Personally developed grant idea and led writing of the application

WWF Biome Health: Manage a grant of £85,000 for the Borneo aspect of the Biome Health project

UNESCO Netexplo Innovation Forum award: One of the ten most promising innovations of 2018

Doris Chen Merit Award: Nominated for excellence within Department of Mathematics, ICL

ADP Henry Taub memorial scholarship: Awarded \$20,000 towards undergraduate tuition fees

EXPERIENCE

Royal College of Arts, London

May 2018 - Present

Visiting tutor

- Provide one-on-one tutorials for master's students on the Innovation Design Engineering (IDE) and Global Innovation Design (GID) joint courses between the RCA and Imperial College London
- Assist in delivering larger workshops introducing e.g. basic use of micro-controllers

Random International, London

April - July 2018

Creative technologist / research scientist

- Worked on computer vision algorithm development, tackling problems such as face detection, face/body pose estimation and depth perception for use in an array of Random International's interactive artworks
- Designed and implemented GPGPU optimised pipelines for deployment of these algorithms on NVIDIA Jetson micro-computers

Hawkeye Innovations, Basingstoke

June - July 2015

Software developer summer placement

- Designed and delivered interface for logging events during Major League Baseball (MLB) matches using web technologies including AngularJS, Bootstrap, HTML5 canvas
- Part of team developing a rugby scrum simulator. Involved implementing shared memory buffers, using Chromium Embedded Framework (CEF), and reading from sensors through an Arduino

BeanPod, London

July - September 2014

Lead front end developer

- Developed a news-reader Android app, the only front end for the system at alpha stage. Implemented a responsive UI design with client side caching. Involved in design of a REST API

Eversholt Rail Group, London

July - September 2012 & 2013

Engineering / Asset Management intern

- Investigated a manufacturing error made during train axle box refurbishment, and following investigation amended official overhaul specifications. Researched capital cost and risks associated with new locomotive purchases

Sony Research and Development, Basingstoke

August 2011

Work experience

- Shadowed team developing mobile technology to aid TV production crews

CREATIVE PROJECTS

SAFE Acoustics: Listen to live audio from our acoustic monitoring network in Borneo ([link](#), [press](#))

Existential Jungle Twitter bot: Translating sounds of the jungle into existential tweets ([link](#), [press](#))